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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531,858	04/19/2005	Ian Alastair Kirk	8830-334US1 (209104)	4000

7590 10/21/2009  
Robert Cannuscio  
Drinker Biddle & Reath  
One Logan Square  
18th & Cherry Streets  
Philadelphia, PA 19103-6996

EXAMINER
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HARCOURT, BRAD

ART UNIT	PAPER NUMBER
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3676

MAIL DATE	DELIVERY MODE
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10/21/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/531,858	KIRK ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Brad Harcourt	3676	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 31 July 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1,3-12,14-16,19,21,22,25,27-34,36,38-41,43 and 44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1,3-12,14-16,19,21,22,25,27-30 and 43 is/are allowed.
- 6) ☒ Claim(s) 31-34,36,38-41 and 44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 4/19/2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the cavity between the spiral portions must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 103***

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 31-34, 36, 39-41 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Metz (US Patent No. 4,083,406) in view of Muecke et al. (US Patent No. 3,727,691).

In reference to claim 31, Metz discloses a method of controlling the passage of fluid through a downhole string 16 located in a borehole, the downhole string 16 including a shoe 52, the downhole string 16 having a longitudinal axis (not numbered, see Fig. 1);

wherein the method includes the steps of:

inserting a separately formed flow control insert 28 within the downhole string 16, above the shoe 52; and

decelerating the fluid through the flow control insert 28;

wherein the flow control insert causes the fluid to change direction from an axial direction to a first spiral direction.

Metz discloses all of the limitations of claim 31 with the exception of changing the direction of fluid motion from a first spiral direction to a second spiral direction. Muecke discloses a flow control insert 23 with opposing spiral portions 25 that change fluid motion from a first spiral direction to a second spiral direction. It would have been obvious to a person having ordinary skill in the art at the time of the invention to change

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fluid motion from a first spiral direction to a second spiral direction on the system of Metz in view of Muecke to ensure that fluid passing through the insert is properly mixed.

In reference to claim 32, the passage through insert 28 is considered to be inclined relative to the conduit axis.

In reference to claim 33, Metz does not explicitly disclose that fluid would decelerate inside of insert 28, but fluid friction caused by contact with the spiral passage would inherently decelerate the fluid.

In reference to claim 34, insert 28 has evenly spaced spiral passages with no obstructions (Fig. 1).

In reference to claim 36, forcing fluid through any spiral passage such as insert 28 would cause the fluid to move through a large distance in a small axial space.

In reference to claim 39, insert 28 is designed to mix fluids that pass through it, which implies that turbulence would be created.

In reference to claim 40, Muecke discloses that fluid passing through opposing spiral portions 26 increase the amount of mixing and that 10 to 30 baffles will provide sufficient mixing, and therefore turbulence (col. 6, lines 46-49).

In reference to claim 41, shroud 22 has apertures 60.

In reference to claim 44, Metz discloses a flow control assembly comprising:

a downhole string 16, including a shoe 52 at a lower end thereof, and

a flow control insert 28 located within the downhole string 16 above the shoe 52, the flow control insert 28 being adapted to regulate flow of fluid through the downhole

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string 16, wherein the flow control insert has a passage therethrough which includes at least one portion which spirals in a first spiral direction; and

wherein the flow control insert 28 is formed separately from the downhole string 16.

Metz discloses all of the limitations of claim 44 with the exception of at least one further portion that spirals in a second direction opposite to the first spiral direction.

Muecke discloses a flow control insert having multiple (10-30) spiral portions 26 that alternate in opposing spiral directions. It would have been obvious to a person having ordinary skill in the art at the time of the invention to change fluid motion from a first spiral direction to a second spiral direction on the system of Metz in view of Muecke to ensure that fluid passing through the insert is properly mixed.

Claims 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Metz (US Patent No. 4,083,406) in view of Muecke et al. (US Patent No. 3,727,691) as applied to claim 32 above, and further in view of Dillon et al. (US Patent No. 5,346,007).

Metz and Muecke disclose all of the limitations of the above claims with the exception of making the apparatus uni-directional. Dillon discloses a float shoe 19 with a passage 23 and a check valve 24. It would have been obvious to a person having ordinary skill in the art at the time of the invention to include a check valve/float shoe on the bottom of a cement string of Metz in view of Muecke and in further view of Dillon so that the fluid does not flow back into the string.

***Allowable Subject Matter***

Claims 1, 3-12, 14-16, 19, 21, 22, 25, 27-30 and 43 are allowed.

***Response to Arguments***

Applicant's arguments with respect to claims 31-34, 36, 38-41 and 44 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brad Harcourt whose telephone number is (571)272-7303. The examiner can normally be reached on Monday through Friday from 8:30 to 6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer Gay can be reached on 571-272-7029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jennifer H Gay/  
Supervisory Patent Examiner, Art  
Unit 3676

BH  
10/16/09